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ABSTRACT

Two major research and development initiatives have been undertaken at Temple University's Center for Vocational Education Professional Personnel Development. The first focused on student learning outcomes and delivery configurations relating to the integration of academic and vocational education. The second focused on building the capacity of local school districts to integrate academic and vocational education. The initiatives are helping school districts in Pennsylvania to address the challenge of providing all students with a high school education that will prepare them for high-skill, high-wage jobs or further education. The outcomes research had two components. Part one sought to determine what students must know and be able to do to graduate from high school, and part two explored delivery configurations as they relate to the integration of vocational and academic content. More than 1,800 educators and business people in Pennsylvania provided responses to a questionnaire that asked for their opinion on 66 educational outcome statements. Analysis of the ratings showed strong support for outcome categories reflecting dependability, positive attitudes, basic skills, and occupationally specific skills. The study concluded that business persons and educators feel similarly about what students must accomplish to graduate from high school. These findings can help guide educational program planning. The second component of the outcomes research sought opinions about the organization of instructional content associated with the delivery of education to accomplish the 66 outcomes. A survey was sent to 1,926 educators, with responses received from 1,089. The most popular educational configuration was equal vocational and academic education, with vocational education preferred for teaching technical skills. An instrument was developed to help secondary school staff members integrate vocational and academic education. (Ten tables and four figures are included in the report.) (KC)

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SCHOOL TO WORK, LEARNING OUTCOMES, AND INTEGRATING ACADEMIC AND VOCATIONAL EDUCATION

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School to Work, Learning Outcomes, and Integrating Academic and Vocational Education

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School to Work, Learning Outcomes,

and Integrating Academic and Vocational Education

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Advancing technology, global competition, and the intense drive for productivity in the U.S. are raising the rewards for training and education higher than ever. As a result, America's schools are challenged to provide all students with a high school education that prepares them for high skill, high wage jobs or further education. In PA, as in most states, the education and business communities have been hard at work trying to address the challenge. We at Temple University's Center for Vocational Education Professional Personnel Development, for example, have been engaged with the PA Department of Education, Bureau of Vocational-Technical Education in a unique collaborative on school reform.

Our work with the Bureau spans a three year period in which PA has been working to set high academic standards and improve education for students by integrating academic and vocational education. Specifically, our work has involved two major research and development initiatives. The first, focused on student learning outcomes and delivery configurations relating to the integration of academic and vocational education. The second focused on building the capacity of local school districts to actually integrate academic and vocational education. Both

projects will be presented in this paper. The efforts when reviewed in the sequence of their development provide a unique connection to concepts typically viewed in a segregated fashion.

Outcomes Research

The outcomes research had two components. Part one sought to determine what students must know and be able to do to graduate from high school, and part two explored delivery configurations as they relate to the integration of vocational and academic content. Each component is addressed separately.

What Secondary Students Should Know and be able to do to Graduate

More than 1,800 educators (vocational and academic teachers, administrators, and counselors) and business people (large and small businesses) from across Pennsylvania provided responses to a questionnaire that asked for their opinion on 66 educational outcome statements. Their ratings were examined through descriptive, comparative, and factor analysis statistical methods.

High levels of agreement between and among the participants ratings were recorded. The average combined rating given to the outcomes was 3.5 on a 4 point scale. Strong support was placed on outcome categories reflecting dependability, positive attitudes, basic skills and occupationally specific skills.

These high ratings prevailed across each sub-group included in the study (i.e., academic teachers, vocational teachers, small businesses, large businesses). Of particular interest was the similarity between the rank order listings of the educators and business persons on the top 25% of the learning outcomes (see Table 1).

Table 1 about here

Data were also analyzed to organize the 66 learning outcomes into groupings called factors. Using factor analysis, the degree of emphasis ratings given to outcome statements by the respondents (in each sub-group) were mathematically examined to identify any interrelationships that might exist. Several factor groupings were found within the data sets of each sub-group. Here too, upon comparison, we found high levels of content similarity within the factor groupings of the employers and educators' data. The factor groupings with the highest levels of similarity were in the areas of Technical Skills, Basic Skills, Job Success Skills, and Job Searching Skills (see Tables 2, 3, 4, and 5).

Tables 2, 3, 4, 5 about here

The finding that business persons and educators feel similarly about what students must accomplish to graduate from

high school may be met with surprise because of the common misconception that these two groups have disparate expectations for high school graduates. This, however, is not the case, at least in Pennsylvania. The information presented in Tables 1-5 demonstrates this concurrence.

The similarity in ratings between the groups in the technical skills factor grouping requires particular attention. The importance of occupationally specific technical skills has been overshadowed in work force development reports because of the emphasis placed on team building, problem solving, and communication skills needed in the work place of the future. But the emphasis on these "work related" skills may contribute to the mistaken belief that businesses are not interested in seeking employees with occupationally specific technical skills (see Table 2). This is certainly not the case.

The development of occupationally specific skills as an outcome of secondary education is particularly significant to small businesses. Nationally, small businesses constitute the majority of the nation's employers. According to 1990 census figures, 86.5% of all employers in the U.S. employ fewer than 20 workers and account for more than 25% of all persons employed. Small businesses, unlike their larger counterparts, typically do not have the resources or facilities to provide employees with technical skill training. The employers we surveyed represented all sizes and aspects of the business community. Importantly, the needs of small businesses in this study were not overshadowed

by the influence of big businesses. It should be noted though, that the employers we surveyed also supported the development of problem solving, communication, and team building skills in the secondary school curriculum, but not at the expense of the development of technical skills.

High levels of concurrence between ratings of employers and educators in respect to the study's factor groupings of basic skills, job success skills, and job searching skills are also significant. In fact, the outcomes comprising the basic skill factor grouping were identical for both groups even though they were independently developed. This certainly serves as a reinforcement to educational reform efforts over the last several years that emphasized the critical need for this skill category. Also of significance was that the basic skill factor grouping in this study identified three educational outcomes not typically included in other listings of basic skills: (a) a proficiency in using a computer, (b) knowledge of basic economic principles, and (c) a proficiency in a core of basic skills designed to prepare students for advanced study. The job success and job search skill factor groupings also displayed high levels of concurrence between the educators and employers (see Tables 4 and 5).

The findings of this research have direct application to topics like curriculum development and curriculum reform in school to work programs. The learning outcomes and respective skill factor findings can help guide educational program planning at the local, district, or regional levels. In PA, for example,

this research has already been applied to the development of a learning outcome for the Career Education and Work Category of the State's new curriculum regulations in the PA School Code. Local districts in PA are also using it to secure a place for technical skills in the secondary curriculum.

Delivery Configurations for Helping Students Achieve

The second component of the outcomes research sought opinions about the organization of instructional content associated with the delivery of educational outcomes. Specifically, we wanted to identify the course or program delivery configurations that might be most appropriate for helping secondary students achieve each of the 66 educational outcomes. To accomplish this, we limited our inquiry to a sub-set of educators rather than the combined population of educators and employers described in part one. Supporting this decision was the research assumption that curricular and instructional decision making were more the domain of professional educators than the expertise of the general population representing business and industry. The population sub-set we surveyed consisted of 1,926 secondary school teachers, counselors, and administrators from comprehensive high schools (CHSs) and area vocational technical schools (AVTSs) in eastern Pennsylvania. The total number of respondents was 1,089.

The instrument was prepared so that the educators could

examine an outcome, and then choose the course/program delivery configuration they believed most appropriate for helping students achieve it. The choices included academic, vocational, or various blends of academic and vocational education (see below). We decided on this format because of the urgency being placed on local districts to integrate academic and vocational education.

Example:

...Review each statement and identify the course or program delivery configuration you believe is most appropriate for helping secondary students achieve the outcome by circling your choice in the column to the right of each statement using the following scale:

Vocational	Vocational with some Academic	Equal Vocational and Academic	Academic with some Vocational	Academic
V	VA	E	AV	A

Several delivery configurations were identified (see Tables 6 through 10). By far, the configuration most frequently chosen was the equal vocational and academic category. This choice was selected by more than 50% of the respondents for approximately one-half of the 66 educational outcome statements in the study. It might be argued because of this finding, that PA's educators exhibit the conceptual and philosophical mind set needed to support the collaborative delivery of most outcomes included in the study. More likely, though, is the notion of readiness among educators to undertake content discussions relating to

integrating academic and vocational education. But what about the other 50% of learning outcomes reviewed?

Several configurations were cited as appropriate for helping students achieve the learning outcomes not addressed by the equal vocational and academic pattern. These additional patterns are equally significant, but especially when examined by factor groupings. Most notable was the technical skills factor. The configurations preferred by respondents for the outcomes in this grouping were vocational (26%), and vocational with some academic (34%). Only 3% of the respondents selected configurations on the academic side of the scale as being appropriate for this category of outcomes (e.g., academic with some vocational, 2%; and academic, 1%).

Table 6 about here

A close look at the ratings in the technical grouping revealed particularly high levels of selection for two educational outcomes. (Remember, a factor consisted of several outcome statements.) One outcome was an "awareness of the special tools and equipment needed for a job" (49% vocational and 31% vocational with some academic). The other was "a proficiency in operating the tools and equipment needed for a job" (44% vocational and 35% vocational with some academic). On average, 60% of the respondents selected the vocational or vocational with

some academic configurations as the most appropriate for helping secondary students achieve technical skills. When this information is juxtaposed with the analysis of importance ratings discussed in part one, the significance of secondary vocational-technical education becomes apparent. That is, the technical skills not only represent a set of learning outcomes that all students should possess, but also outcomes that may be most appropriately learned through a vocational, or vocational and some academic course or program delivery configuration. Some outcomes, and apparently both academic and vocational teachers agree, are best addressed by teachers with technical expertise. Interestingly, the authors of the SCANS Report make this same point when addressing technical skills in their study (see Tables 7-10). Of course, this same point can be made about specialized academic expertise as well.

Tables 7,8,9 and 10 about here

But in addition to confirming technical content and various means of delivery (i.e., configurations), it is argued here that this research provides an important starting point for discussions on topics about organizing and delivering instruction for the achievement of educational outcomes. To make this point we will return to a point we made earlier.

On some outcomes, respondents indicated a configuration that was more vocational and less academic. For others, it was the

reverse; more academic less vocational. And, still another configuration, and the most common as we pointed out, was equal academic and vocational. The distribution presents several discussion points for teacher educators and professional personnel development specialists. A topic of particular interest to us at the Temple Center ties to blends of academic and vocational education, or in contemporary terms--the integration of academic and vocational education. We have come to recognize that it is one thing to recognize the need for curriculum/program blends, but quite another to make the concept work. Consider if you will, some fairly standard discussion at our Center. Let's imagine the focus of the discussion is on the basic skills factor grouping (see Table 7), and in particular the outcome associated with "developing a proficiency in reading." We know the outcome received a relatively high number of responses in the equal academic and vocational category (64%), a fairly high number of responses in the academic with some vocational category (15%), and a moderate number of responses in the academic category (12%). The outcome also received a relatively low number of responses for the vocational (1%) and vocational with some academic (7%) categories, respectively. With this distribution in mind, we begin to consider the following questions:

1. What level of expertise is there among practicing secondary academic and vocational teachers in the area of

reading? How was reading addressed in the preservice preparation of academic and vocational teachers? In inservice programs?

2. What methods of instructional delivery are in place to advance reading levels among secondary school students who read below grade level?

3. How important is the development of reading skills in secondary vocational-technical education and other school to work programs?

As we reflect on these questions, we are thinking about program blends, and, at the same time, the realities and complexities of public schooling. Usually there are more questions. Where does the development of reading proficiency begin? What responsibility does preservice teacher education have? What role can inservice education play? Staff development? How can we improve education for students? Discussions like this have played themselves out several times as we have considered the outcomes research. It was this process that led us to the second initiative discussed in this paper: building the capacity of local school districts to actually integrate academic and vocational education.

Assisting Local School Districts to Integrate Academic and Vocational Education.

To help districts integrate academic and vocational education an R&D initiative was undertaken to disentangle the complexities associated with school improvement, and simultaneously sharpen the focus of inservice professional development activities. The work began in 1992 and drew on change theory (Rogers, 1986; Lindquist, 1978), and research on adopting educational innovations (Hall & Loucks, 1985). The initiative included 3 design components:

- Identifying and verifying essential elements of an integrated curriculum (we treated contextual learning/the integration of academic and vocational education as an educational innovation)

- Assessing configurations of the innovation (we wanted to assist districts in determining where their staffs were positioned along an adoption/change continuum)

- Implementing intervention strategies and nurturing the innovation (the goal was focused professional development activities)

We have completed phase one and phases two and three are underway. This paper, however, will focus only on phase one. Specifically, we will describe an instrument designed to help school districts focus the staff development and inservice

education needed for integrating academic and vocational education. The instrument, know as the SIAVE Assessment (Brower, Walker, Wichowski, 1994) is based on a description of education proscribed in the "Schools that Work" literature. The instrument has been validated by national experts and personnel at exemplary Schools that Work sites throughout the country.

In developing the SIAVE (which stands for Status of the Integration of Academic and Vocational Education), we viewed the integration of academic and vocational education as an educational innovation. Our goal was to develop a "yardstick" that school district staff could measure themselves against as they undertook and progressed with the work of integration. Then, based on the assessment, inservice education could be designed that was both appropriate and responsive for nurturing a staff's work. Our final instrument defined the integration of academic and vocational education as consisting of 8 components, each with several observable elements that could be used to further define it (See Figures 1 and 2).

Figures 1 and 2 about here

The scaling for the instrument was based on the work of Gene Hall and Shirley Hord (1987), and Everett Rogers (1983). It tapped nearly 40 years of research on change theory and adopting educational innovations. The scale presents an adoption

continuum that ranges from 0 (no use) on one end, to 6 (renewal) on the other end. Placement on the continuum enables sensitive staff development to be designed (see Figure 3).

Figure 3 about here

We believe the SIAVE Assessment has several uses within the current academic and vocational education integration milieu and districts are encouraged to experiment. Consider, for a moment, that in all states and regions there are urban, suburban, and rural contexts; area vocational-technical, skill center, and comprehensive high school settings; professional staffs that range from novice to veteran; and part-time, full-time, and comprehensive delivery systems all, simultaneously, experimenting with the integration of academic and vocational education. Consider too that districts and school staffs that have undertaken the work of integration are no doubt spread out, at some point on a continuum that ranges from the very early stages of trial to moderate and fairly sophisticated levels of implementation. Consider further, that this variability probably extends both to components and combinations of components of the innovation. The contexts seem limitless. But even so we believe the SIAVE Assessment can help districts to disentangle the complexities of integration and simultaneously sharpen the focus

of inservice professional development.

For example, if a district is just beginning to integrate academic and vocational education, the Assessment can be administered to focus discussion and educate the staff on the comprehensiveness of the concept. Or, if a staff is progressing with implementation but full adoption of the innovation has not yet been achieved, particular components and elements on the SIAVE Assessment can be focused upon. Similarly, in advance implementation sites, components and associated elements of the SIAVE can be addressed in toto or individually so new and potentially more powerful modifications of the innovation can be considered for meeting changing goals. With all administrations of the SIAVE Assessment, however, we recommend that two criteria be satisfied.

First, we believe that staff must be fully oriented to the content on the SIAVE before the instrument is administered. Each component and its associated elements should be reviewed and thoroughly discussed. A full day of inservice education seems appropriate for the task. Second, prior to administering the Assessment we encourage districts to arrange those to be assessed in "small learning communities" or "cohort groups." Our notion of a learning community or cohort group for integrating academic and vocational education is that it involves, minimumly, academic teachers of math, science, and language arts; a vocational teacher or teachers for an occupation or cluster of occupations; and academic and vocational administrators and support personnel

(e.g., guidance counselor). Using small learning communities or cohort groups as the organizational frame for carrying out the assessment will enable districts to examine variability in integration programmatically. We recommend this strategy even if an entire school staff is being assessed. We feel this organizational frame is critical to a successful assessment. More detailed information on administering the assessment is included in Figure 4.

Figure 4 about here

As was stated earlier, Phases 2 and 3 of this initiative are just now getting underway. This fall we oriented selected schools and staff from the Temple University catchment area to the SIAVE, and this spring a pilot study is being planned for three different configurations of school-to-work programs: Shared-time AVTS, Full-time AVTS, and Comprehensive High School. We believe the promise of this R&D initiative is to substantially improve school-to-work programs in our Commonwealth.

This paper has focused on two major research and development initiatives at Temple University's Center for Vocational Education Professional Personnel Development. The first, focused on student learning outcomes and delivery configurations relating

to the integration of academic and vocational education. The second focused on building the capacity of local school districts to actually integrate academic and vocational education. The initiatives are helping school districts in PA to address the challenge of providing all students with a high school education that prepares them for high skill, high wage jobs or further education.

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TABLE 1

TOP RANK ORDER OF EDUCATIONAL OUTCOMES BY BUSINESS AND INDUSTRY/ EDUCATORS

Business and Industry	Educators
1. An ability to be dependable on the job.	1. An ability to follow directions.
2. An ability to follow directions.	2. An ability to be dependable on the job.
3. A positive attitude toward work.	3. An ability to be on time.
4. An ability to be on time.	4. A positive attitude toward work.
5. An ability to effectively communicate verbally and in writing.	5. An ability to perform a job safely.
6. A positive attitude toward learning.	6. A positive toward learning.
7. The desire to work hard.	7. A respect for authority.
8. A proficiency in applying reading skills.	8. A proficiency in applying reading skills.
9. An ability to work as a team member.	9. The desire to work hard.
10. A positive attitude toward co-workers.	10. An ability to effectively communicate verbally and in writing.
11. A respect for authority.	11. A feeling of self-confidence.
12. An ability to get along with a variety people.	12. An ability to meet an identified standard when performing a job.
13. An ability to meet an identified standard when performing a job.	13. A proficiency in operating tools and equipment needed for a job.
14. An ability to perform a job safely.	14. An ability to fill out a job application.
15. An ability to efficiently manage time and materials.	15. A proficiency in arithmetic.
16. A feeling of self-confidence.	16. An understanding of employer's expectations.

TABLE 2

TECHNICAL SKILL FACTOR GROUPINGS

Business and Industry	Educators
• A proficiency in operating tools and equipment needed for a job.	• An awareness of the special tools and equipment needed for a job.
• An understanding of technical information related to a job.	• A proficiency in operating tools and equipment needed for a job.
• An awareness of the special tools and equipment needed for a job.	• An understanding of terminology related to a job.
• An understanding of terminology related to a job.	• An understanding of the principles and concepts of craftsmanship.
• A knowledge of training required to do a job.	• An understanding of technical information related to a job.
• An understanding of the steps required to do a job.	• An understanding of the steps required to do a job.
• An identified career goal.	• An ability to perform a job safely.
	• An understanding of rights and duties as a worker.
	• An ability to present a good image to an employer.

Outcome statements common to both factor groupings have been underlined.

TABLE 3

BASIC SKILL FACTOR GROUPINGS

Business and Industry	Educators
• A proficiency in measurement and geometry.	• An ability to effectively communicate verbally and in writing.
• A proficiency in basic algebra.	• A proficiency in applying reading skills.
• A proficiency in arithmetic.	• A proficiency in applying writing skills.
• Knowledge of basic economic principles.	• A proficiency in arithmetic.
• An understanding of basic scientific concepts and processes.	• A proficiency in a core of basic skills designed to prepare students for advanced study.
• A proficiency in using a computer.	• A proficiency in using a computer.
• An ability to effectively communicate verbally and in writing.	• A proficiency in measurement and geometry.
• A proficiency in applying writing skills.	• A proficiency in basic algebra.
• A proficiency in a core of basic skills designed to prepare students for advanced study.	• Knowledge of basic economic principles.
• A proficiency in applying reading skills.	• An understanding of basic scientific concepts and processes.

Outcome statements common to both factor groupings have been underlined.

TABLE 4

JOB SUCCESS SKILL FACTOR GROUPINGS

Business and Industry	Educators
• An ability to be dependable on the job.	• A respect for authority.
• The desire to work hard.	• An ability to be dependable on the job.
• A positive attitude toward work.	• The desire to work hard.
• An ability to meet an identified standard when performing a job.	• An ability to follow directions.
• An ability to follow directions.	• A positive attitude toward learning.
• An understanding of employer's expectations.	• A positive attitude toward work.
• An ability to be on time.	• A feeling of self-confidence.
• A respect for authority	• An understanding of employer's expectations.
• A positive attitude toward co-workers.	• An ability to meet an identified standard when performing a job.
	• An ability to be on time.

Outcome statements common to both factor groupings have been underlined.

TABLE 5

JOB SEARCH SKILL FACTOR GROUPINGS

Business and Industry	Educators
• An ability to interview effectively for a job.	• An ability to prepare a resume.
• A knowledge of how to approach an employer for potential employment.	• A knowledge of how to approach an employer for potential employment.
• A knowledge of how to look for a job.	• A knowledge of how to look for a job.
• An ability to prepare a resume.	• An ability to interview effectively for a job.
• An ability to fill out a job application.	• An ability to fill out a job application.
• A desire to seek out job opportunities.	• An awareness of current and projected job opportunities.
• An awareness of current and projected job opportunities.	• A desire to seek out job opportunities.
• An ability to present a good image to an employer.	• An identified career goal.
• Be able to select, manage and maintain personal and family resources.	
• An understanding of labor unions and how they affect the worker or job.	

Outcome statements common to both factor groupings have been underlined.

TABLE 6

DELIVERY CONFIGURATIONS SELECTED:
TECHNICAL SKILLS FACTOR

EDUCATION OUTCOMES	DELIVERY CONFIGURATIONS V %	VA %	E %	AV %	A %
• An awareness of the special tools and equipment needed for a job.	**49**	**31**	**18**	1	0.7
• A proficiency in operating tools and equipment needed for a job.	**44**	**35**	**20**	1	0.5
• An understanding of terminology related to a job.	**27**	**34**	**36**	3	1
• An understanding of the principles and concepts of crafts-manship.	**34**	**42**	**22**	2	1
• An understanding of technical information related to a job.	**2**	**40**	**33**	5	1
• An understanding of the steps required to do a job.	**15**	**30**	**52**	3	0.7
• An ability to perform a job safely.	**31**	**36**	**31**	1	0.6
• An understanding of rights as a worker.	**21**	**34**	**41**	3	1
• An ability to present a good image to an employer.	**10**	**24**	**61**	3	1
Average factor percent	**26**	**34**	**35**	2	1

NOTE: Delivery configuration selections at or in excess of 10% have been boldfaced.

TABLE 7

DELIVERY CONFIGURATIONS SELECTED:
BASIC SKILLS FACTOR

EDUCATION OUTCOMES	DELIVERY CONFIGURATIONS V	VA	E	AV	A
	%	%	%	%	%
• An ability to effectively communicate verbally and in writing.	1	9	**59**	**21**	**10**
• A proficiency in applying reading skills.	1	7	**64**	**15**	**12**
• A proficiency in applying writing skills.	1	7	**50**	**29**	**13**
• A proficiency in arithmetic.	2	**12**	**55**	**20**	**11**
• A proficiency in a core of basic skills designed to prepare students for advanced study.	3	**11**	**53**	**22**	**12**
• A proficiency in using a computer.	4	**13**	**59**	**18**	6
• A proficiency in measurement and geometry.	3	**17**	**42**	**26**	**12**
• A proficiency in basic algebra.	2	9	**35**	**31**	**25**
• Knowledge of basic economic principles.	2	**10**	**48**	**25**	**15**
• An understanding basic scientific concepts and processes.	2	**10**	**50**	**26**	**12**
Average factor percent	2	**11**	**52**	**23**	**13**

NOTE: Delivery configuration selections at or in excess of 10% have been boldfaced.

TABLE 8

DELIVERY CONFIGURATIONS SELECTED:
JOB SUCCESS FACTOR

EDUCATION OUTCOMES	DELIVERY CONFIGURATIONS				
	V	VA	E	AV	A
	%	%	%	%	%
• A respect for authority.	3	9	**84**	3	2
• An ability to be dependable on the job.	**13**	**27**	**57**	3	1
• The desire to work hard.	**10**	**14**	**72**	3	1
• An ability to follow directions.	4	**12**	**78**	4	2
• A positive attitude toward learning.	2	8	**82**	6	2
• A positive attitude toward work.	**11**	**19**	**68**	3	1
• A feeling of self-confidence.	3	9	**83**	4	2
• An understanding of employer's expectations.	**16**	**34**	**47**	2	0.6
• An ability to meet an identified standard when performing a job.	**16**	**30**	**51**	3	1
• An ability to be on time.	6	**12**	**78**	3	1
Average factor percent	9	**17**	**70**	3	1

NOTE: Delivery configuration selections at or in excess of 10% have been boldfaced.

TABLE 9

DELIVERY CONFIGURATIONS SELECTED:
AFFECTIVE JOB SKILLS FACTOR

EDUCATION OUTCOMES	DELIVERY CONFIGURATIONS V	VA	E	AV	A
	%	%	%	%	%
• An ability to work as a team member.	9	**25**	**62**	3	1
• A positive attitude toward co-workers.	**11**	**18**	**66**	3	1
• An understanding of the need to upgrade job skills.	**23**	**35**	**38**	3	1
• An ability to be creative and make suggestions to improve the job.	**15**	**34**	**46**	4	1
• A knowledge of training required for advancement in the job.	**19**	**38**	**39**	4	1
• An ability to get along with a variety of people.	3	9	**82**	4	1
• A proficiency in decision-making skills.	5	**15**	**71**	6	2
Average factor percent	**12**	**25**	**58**	4	1

NOTE: Delivery configuration selections at or in excess of 10% have been boldfaced.

TABLE 10

DELIVERY CONFIGURATIONS SELECTED:
JOB SEARCH SKILLS FACTOR

EDUCATION OUTCOMES	DELIVERY CONFIGURATIONS V	VA	E	AV	A
	%	%	%	%	%
• An ability to prepare a resume.	5	**16**	**60**	**14**	7
• A knowledge of how to approach an employer for potential employment.	**10**	**31**	**54**	4	1
• A knowledge of how to look for a job.	8	**27**	**59**	4	1
• An ability to interview effectively for a job.	8	**24**	**61**	5	2
• An ability to fill out a job application.	8	**20**	**63**	6	3
• An awareness of current and projected job opportunities.	**14**	**30**	**50**	4	1
• A desire to seek out job opportunities.	**11**	**26**	**57**	5	1
• An identified career goal.	8	**21**	**66**	3	2
Average factor percent	9	**24**	**60**	6	2

NOTE: Delivery configuration selections at or in excess of 10% have been boldfaced.

Figure 1

Components of the SIAVE Assessment

COMPONENT 1: A CHALLENGING AND COHERENT PROGRAM OF STUDIES THAT PREPARES CAREER-BOUND STUDENTS FOR CONTINUED LEARNING IN EMPLOYMENT AND AN EDUCATIONAL SETTING

COMPONENT 2: INDIVIDUALIZED ADVISEMENT FOR CAREER-BOUND STUDENTS THAT USES INFORMATION AND EXPERIENCES AS THE BASIS FOR DECISIONS ABOUT SELF, EDUCATIONAL PROGRAMS AND EMPLOYMENT

COMPONENT 3: SCHOOL-BASED AND WORK-BASED ACTIVITY THAT FOSTERS HIGHER EXPECTATIONS FOR CAREER-BOUND STUDENTS

COMPONENT 4: COOPERATION BETWEEN ACADEMIC AND VOCATIONAL EDUCATORS TO ASSIST CAREER-BOUND STUDENTS TO MEET HIGH PERFORMANCE STANDARDS

COMPONENT 5: EXTRA HELP AND EXTRA TIME TO ASSIST CAREER-BOUND STUDENTS TO COMPLETE A RIGOROUS AND COHERENT PROGRAM OF ACADEMIC AND VOCATIONAL STUDIES

COMPONENT 6: PLANNED PROFESSIONAL DEVELOPMENT FOR ACADEMIC AND VOCATIONAL STAFF

COMPONENT 7: VARIOUS INDICES USED TO EVALUATE PROGRESS TOWARD ACADEMIC AND VOCATIONAL GOALS

COMPONENT 8: ADMINISTRATIVE SUPPORT

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Figure 2

Associated Elements for Selected Components

COMPONENT 1: A CHALLENGING AND COHERENT PROGRAM OF STUDIES THAT PREPARES CAREER-BOUND STUDENTS FOR CONTINUED LEARNING IN EMPLOYMENT AND AN EDUCATIONAL SETTING

A. Career-bound students enrolled in three years of math (equal to Algebra I or higher), three years of lab-based science (equal to Chemistry, Physics or a Biology course), and four years of English (college preparatory or equivalent.)

B. Applied academics courses (math, science and communications) that replace traditional "general" courses. (See Exhibit 1 for a description of applied academics courses.)

C. Vocational courses that emphasize mastery of related academic content. (See Exhibit 2 for a description of vocational courses that emphasize academic content.)

D. A "tech-prep" strategy that articulates secondary and postsecondary occupational and academic subjects.

E. School-based learning linked to work-based learning, e.g., shadowing, internships, cooperative education.

F. Student handbook that describes high-level academic and vocational programs leading to a career objective.

G. Active vocational student organizations.

H. Active advisory committees.

I. Program embedded in and driven by a strategic plan.

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Figure 2 (continued)

COMPONENT 3: SCHOOL-BASED AND WORK-BASED ACTIVITY THAT FOSTERS HIGHER EXPECTATIONS FOR CAREER-BOUND STUDENTS

A. Collaboration between vocational and sending schools, parents and students to develop rigorous, coherent academic programs for career-bound students.

B. In-school performance standards "benchmarked" against industry standards, with students held accountable for these standards.

C. Aptitude and interest assessments conducted by a "community of educators" (teachers, guidance and industry personnel.)

D. Career-bound students enrolled in three years of math (equal to Algebra I or higher), three years of lab-based science (equal to Chemistry, Physics or a Biology course), and four years of English (college preparatory or equivalent.)

E. An instructional system judged adequate to enable career-bound students to meet revised academic requirements and industry performance standards.

F. Nontraditional homework, i.e., projects, case studies, work visits, community projects, interdisciplinary (jointly constructed) assignments;

G. A "tech-prep" strategy that articulates secondary and postsecondary occupational and academic subjects.

H. Vocational teachers stressing math, science and reading.

I. School culture (climate) that includes:

1. students completing challenging tasks and solving complex, multi-step, high-level problems;
2. staff development devoted to raising expectations; and
3. vocational and academic teachers communicating to career-bound students that they can meet higher academic expectations.

J. Elimination of "general track" and "slowed down" courses.

K. Multi-faceted, active and aggressive community and home support for higher expectations efforts.

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Figure 3

SIAVE Assessment Scaling

COMPONENT 1: A CHALLENGING AND COHERENT PROGRAM OF STUDIES THAT PREPARES CAREER-BOUND STUDENTS FOR CONTINUED LEARNING IN EMPLOYMENT AND AN EDUCATIONAL SETTING

	OBSERVABLE ELEMENTS	"NO USE" OF ELEMENT	"READINESS USE" OF ELEMENT		"BASIC USE" OF ELEMENT		"ADVANCED USE" OF ELEMENT	
		0	1	2	3	4	5	6
A.	Career-bound students enrolled in three years of math (equal to Algebra I or higher), three years of lab-based science (equal to Chemistry, Physics or a Biology course), and four years of English (college preparatory or equivalent.)							
B.	Applied academics courses (math, science and communications) that replace traditional "general" courses. (Note: See Exhibit 1 for a description of applied academics courses.)							
C.	Vocational courses that emphasize mastery of related academic content. (Note: See Exhibit 2 for a description of vocational courses that emphasize academic content.)							
D.	A "tech-prep" strategy that articulates secondary and postsecondary occupational and academic subjects.							
E.	School-based learning linked to work-based learning, e.g., shadowing, internships, cooperative education.							
F.	Student handbook that describes high-level academic and vocational programs leading to a career objective.							
G.	Active vocational student organizations.							
H.	Active advisory committees.							
I.	Program embedded in and driven by a strategic plan.							

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Figure 4

ADMINISTERING THE *SIAVE* ASSESSMENT

With all administrations of the SIAVE Assessment, we recommend the following steps:

1. **Organize those involved in the assessment as "small learning communities" or "cohort groups."**

   :A learning community or cohort group involves, at minimum, academic teachers of math, science, and language arts; a vocational teacher or teachers for an occupation or cluster of occupations; and academic and vocational administrators and support personnel (e.g., guidance counselors). Each cohort group member should understand how the integration of academic and vocational education operates (is "used") in his/her site.

   :Using small learning communities or cohort groups as the organizational frame for carrying out the assessment will enable districts to examine variability in integration programmatically. We recommend this strategy even if an entire school staff is being assessed. We feel this organizational frame is critical to a successful assessment.

2. **Orient cohort group to the portion of the SIAVE that will be assessed before the instrument is administered. Cohort groups may choose to focus on one component or on all components and the associated observable elements.**

   :A full day of inservice education might be necessary for the task.

3. **Direct each staff member to record his/her perceptions concerning the "use" of observable elements in the component(s) being assessed.**

4. **Encourage discussion of the perceptions recorded in Step 3.**

   :The discussion at this level should enable cohort group members to clarify and explain their perceptions. It should not be designed to force agreement on observable elements.

5. **Record modified perceptions.**

6. **Use perceptions (Step 5) for making Site Use Status (SUS) assessments. It is expected that assessments will be "ranges," for example, "the majority of cohort group members feel observable element X is 'used' at the 2 level," or "the majority of cohort group members feel obsservable element X is 'used' at levels 2 and 3."**

7. **Develop personal and cohort group staff development plans around SUS assessments. (See USING *SIAVE* TO "FRAME" INSERVICE EDUCATION for staff development suggestions.)**

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THE STATUS OF THE INTEGRATION OF ACADEMIC AND VOCATIONAL EDUCATION (*SIAVE*[1])

General Information

We are studying the integration of academic and vocational education at PA's Technical Schools and High Schools. We want to determine the extent to which the description of education in this instrument reflects the educational program for the career-bound youth with whom you are presently involved. Career-bound youth are the "other" students who plan to work or enroll in a two-year community college or vocational-technical institute rather than enter a four-year college or university after graduating from high school.

Instructions to be followed:

The person administering the SIAVE will provide specific instructions. The instrument consists of 8 components, each with observable elements that help to define the component. When assessing any component, first review the component, then read and rate the elements beneath it by placing a check mark in the numbered column that best describes the degree that element is "used" for the career bound students you teach, counsel, or are in some way responsible.

Look at the following example:

Component 1:

A challenging and coherent program of studies that prepares career-bound students for continued learning in employment and an educational setting.

Observable Element:

A. Career-bound students enrolled in three years of math (equal to Algebra I or higher), three years of lab-based science (equal to Chemistry, Physics or a Biology course), and four years of English (college preparatory or equivalent).

Check column:	Degree the element is "used"	
0	If--	**No use:** No action has been taken related to this element.
1	If--	**Oriented to element:** You are aware or know about this element.
2	If--	**Prepared to use element:** You are aware of this element and uncertainties surrounding it have been reduced (e.g., through discussion or inservice.)
3	If--	**Initial use of element:** You are just beginning to use this element, with most of your efforts focused on day-to-day concerns.
4	If--	**Routine use of element:** You use this element routinely making few or no personally-motivated or student-motivated changes.
5	If--	**Refined use of element:** You use this element and have made adaptations or refinements to improve its impact on students.
6	If--	**Renewal use of element:** You have fully adopted this element and continually consider new and potentially more powerful modifications to meet changing goals.

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[1]The SIAVE (Status of the Integration of Academic and Vocational Education) was developed as part of a research effort at Temple University's Center for Vocational Education Professional Personnel Development. It is based on change theory and the work of Gene E. Hall and Shirley M. Hord (Change in Schools: Facilitating the Process, 1987) and Everett M. Rogers (Diffusion of Innovations, 1983.)